

with proper clearance for the cutting tools. If the size and location of the holes to be drilled are not very important as regards accuracy, it is sufficient to simply drill through the work with a full-sized drill guided by the jig-plate, but when a nice, smooth, standard-sized hole is required, the holes in the work must be reamed. The hole is first spotted by a spotting drill, which is of exactly the same size as the reamer used for finishing, and which nicely fits the hole in the jig-plate or bushing. Then a so-called reamer drill, which is 0.010 inch, or less, smaller in diameter than the reamer, is put through, leaving only a slight amount of stock for the reamer to remove, thereby obtaining a very satisfactory hole. Sometimes a separate loose bushing is used for each one of these operations, but this is expensive and also unnecessary, as the method described gives equally good results.

By using the rose reaming method very good results will also be obtained. In this case two loose bushings besides the lining bushing will be used. These bushings are described and tabulated in a following chapter. The drill preceding the loose chucking reamer is $\frac{1}{8}$ inch smaller than the size of the hole. This drill is first put through the work, a loose drill bushing made of steel being used for guiding the drill. Then the rose chucking reamer is employed, using, if the hole in the jig be large, a loose bushing made of cast iron,

When dimensioning the jig on the drawings dimensions should always be given from two finished surfaces of the Jig to the center of the holes, or at least to the more important ones. In regard to the holes, it is not sufficient to give only the right angle dimensions, *a*, *b*, *c*, and *d*, etc., Fig. 2, but the radii between the various holes must also be given. If then* arc* more than two holes, the radii should always be given between the nearest holes and also between the holes that bear a certain relation to one another, as, for instance, between centers of shafts carrying meshing gears, sprockets, etc. This will prove a great help to the toolmaker. In the case under consideration, the dimensions ought to be given from two finished sides of the work to the centers of the holes, and also the dimension between the centers of the holes to be drilled.